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AUTHOR Andersen, Hans O.
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ABSTRACT

The need to modernize teacher education procedures is a universal problem. This need is particularly evident in developing countries where adherence to the old syllabi and the "tried and true" methods of instruction is strong and where highly trained perscnnel capable of leading a reform are in short supply. This model for a competency approach to teacher education could be developed into a viable teacher education program. It is skeletal because teacher preparation must be sensitive to the requirements of the local society. Consequently, the meat for the bones must be added locally by those people most sensitive to local needs, problems, and demands. (Author/DDO)

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Competency Based Instruction for Teacher Preparation In Developing Countries

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Hans O. Andersen*

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Competency based methods instruction is a modern trend in teacher preparation that is gaining popular support around the world. It is a viable approach to teacher preparation everywhere and, because it can be developed additively, it may be a particularly viable approach to teacher preparation in developing countries. However, because human resources are limited, trends should not be pursued by developing countries until they have been studied and their potential estimated. It is my intention to examine, at least partially, the competency approach in this paper and indicate how and why this approach can and perhaps should be used in developing teacher preparation programs in developing countries.

What Is A Competency?

The movement toward developing competency based teacher education is an honest expression of the fact that while the prospect of consistently producing a competent teacher continues to elude us, it is possible to prepare teachers who have specific teaching

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*Dr. Andersen is an Associate Professor of Science Education at Indiana University, Bloomington, Indiana, 47401. In 1972 he served as a UNESCO Expert in Educational Techniques at the Institute for the Promotion of Teaching Science and Technology, UNESCO Box 1425, Bangkok, Thailand.

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competencies. While teachers so trained may fall far short of being omnicapable, the fact that they have specific, definable competencies will provide each of us the opportunity to examine the influence of these competencies on student achievement. (Affective, Cognitive, and Psychomotor)

For the purposes of this paper a competency is defined as an observable teacher behavior that may positively influence student learning. Writing behavioral objectives, asking different types of questions, probing, using indirect influence, and being enthusiastic are examples of competencies.

Why Select This Approach?

The decision to begin the development of competency based methods instruction can be made for several reasons. One of our major reasons is that is is ridiculous to continue trying to develop the omnicapable teacher--the teacher who can be all things to all students. The teacher who is a "jack of all trades" is theoretically essential to the successful functioning of the one room school; but today's schools are becoming more specialized and, therefore, we should begin developing instructional materials that will prepare teachers for the more specialized roles in today's schools. I am not suggesting that we haven't made significant progress in teacher education since 1900, but I do suggest that more progress will be made if we begin developing competency based instruction for specialized teaching skills. Individual differences among students, aptitude differences among teachers, and the obvious advantages of education's new technology clearly indicate that teachers with specific competencies are needed.

While it is not my intention to elaborate on the need for specialization, I feel pressed to point out that at least one educational innovation, team teaching, often fails because the teachers do not have the specialized skills needed to make team teaching a success. I am not stating that these teachers aren't already specialized, because I realize that we have become fairly expert in such matters as placing a specialist in botany and a specialist in zoology together and directing them to teach biology. I am stating that subject matter competency is necessary; but without the requisite teaching skill, it is not sufficient.

Assume for a moment that I have been asked to hire a group of teachers who could become an effective teaching team. I would probably begin by looking for candidates with subject matter competency; but that would only be a beginning. Then I would begin searching for teachers with specialized teaching competencies and interest in perfecting these skills. Some of the competencies I would search for in teachers would include: (No order intended)

1. Asking varieties of questions,
2. Being enthusiastic,
3. Evaluating student behavior,
4. Evaluating teacher behavior,
5. Using an indirect teaching style,
6. Selecting or writing <u>good</u> performance objectives,
7. Sequencing instruction,
8. Using reinforcement techniques, and
9. Working in a team.

Team members would need to have some skill in all of these competencies. In addition, each team member would be expected to be an exemplary model of a few teaching competencies. My rationale for constituting a team with specializations in various teaching behaviors is simple. First, specialized pre-service or in-service instruction could be designed to focus direct attention on specialized skill development. And second, a team of specialists, once constituted, might well serve as its own source of in-service education.

I suggested that there were several reasons for considering competency based instruction. I have tried to point out that:

a. It is very unlikely that we will ever be able to produce the mythical omnicapable teacher.

b. Because omnicapability is probably beyond us, we should consider developing instruction for specific teaching skills that have an observable effect on learning.

c. Teachers have different aptitudes and different interests.

d. If we would treat the teachers in terms of their interests and aptitudes, that is if we gave them specialized instruction, we could increase the probability of developing more successful practitioners.

Another reason for developing a competency based system stems from the need for specific information concerning the successes and failures of students in real teaching situations which could be related to the training or education we provide. While it is easy to list the failures and "drop-outs," it is not always easy to identify the reasons or causes. Furthermore, viewing the failures and "drop-outs" as normal statistical probabilities when it is possible that some of these "drop-outs" and failures are potentially outstanding is a dangerous business we can no longer afford. We must relate teaching success to educational

variables because such knowledge will help us make rational decisions concerning the education of teachers. Properly conceived and carefully designed competency based instruction has the potential to permit the teacher educator to relate his efforts to teaching practices and student achievement. While critics of competency based instruction may accuse us of tampering with, rather than reformulating teacher education, it appears to me that reformulation without an empirical base would be a mistake. Reformulation efforts should be based on empirical data whenever possible and a means of collecting this data is to systematically define competencies, measure their development, and study the effects of these now measurable skills on the affective, cognitive, and psychomotor development of students.

Finally, anyone who is familiar with the shortage of highly trained personnel, research needs, and the desires of the educational leaders to initiate programs consistent with local philosophy should see that this approach can alleviate these problems. The shortage of highly trained personnel often eliminates the possibility of completely reformulating teacher education in a short period of time. A competency approach designed to proceed additively that is coupled to a research effort may well be the best and easiest way to improve teaching practices because initiating this approach would demand fewer human resources and a research base could be collected as development proceeded. (Many developing countries have a research base that can be referred to in initiating change. And while the research base is small and incomplete, it often illustrates the gap between teaching practices and research findings very dramatically).

Some Problems

I have outlined the major reasons for beginning the development of a competency based program. However, one must remember that this is only a means of getting at what we want. I would assume that we want an evolving teacher education program--a teacher education program that would never need major overhauling but which would be self-corrective in the same sense that science is self-corrective. Competency based teacher education, as it is presently conceived, contains a mechanism of self-correction; but one is faced with the realization that the mechanism may be overloaded by the complexity of the problems that must be faced. A few of the most obvious problems include: (1) the selection of prospective teachers, (2) the sequence of instruction, (3) the danger of perpetuating the past, and (4) the need for additional research on factors that influence student learning that can be manipulated.

First, assume that effective instruction was designed for every definable teacher competency and that all the competencies of the effective teacher were defined. It is still conceivable that some teachers, so trained, would not be very good teachers. Furthermore, the explanation for this "incompetent competent" may be far more complex than the time worn argument about the relationship between the whole and the sum of its parts. Competence is a relative term and the sum of those competencies, even though they add up to a competent teacher in one setting, may have a disastrous effect in another setting. In this respect competency based instruction may not be better than our present instruction

because it will not avoid the need for a careful selection process. Hence, one might argue that it would be better to invest money in designing means of determining who should teach than to spend our limited resources on developing competencies in people who won't be able to teach anyway. One must face the issue--selection may be more important than training, at least today. However, while rigorous selection is possible in some developed countries, is not possible in developing countries because the demand for trained teachers usually exceeds the supply.

Second, precise measuring devices which will accurately determine the extent of one's competency are needed. To say that a person is competent in asking questions or probing because he received a certain score on a paper and pencil test, demonstrated these skills in a peer teaching situation, or in student teaching, may be as dangerous as making inferences about student classroom behavior from data on maze running rats. Competence in a college classroom, laboratory setting, or student teaching, will continue to be uninteresting if competence in teaching is not predictable from these findings. Research aimed at determining when one might state that a teacher has developed a competency may lead to some interesting conclusions. We might, for example, discover that on-the-job training or an apprenticeship with a master teacher may be far more efficient and effective than anything we can do on our college campuses.

Third, the question concerning when and where a competency should be developed is not as important as deciding which competencies should be developed. Rosenshine and Furst,[9] who recently completed a relatively exhaustive study of the research

on teaching, emphatically state that at the present time there is not enough research information known about the relationship between teacher behavior and student learning to design adequate programs of teacher education. In this review of the research Rosenshine and Furst describe the eleven strongest variables reported; but they hasten to point out that their review is based on correlational, not experimental studies, and that these variables cannot be placed in teacher education programs with assurance that training teachers to use these behaviors will enhance student performance. The eleven behaviors reported by Rosenshine and Furst are:

1. Cognitive Clarity
2. Teacher's Use of Variety
3. Teacher Enthusiasm
4. Teacher Task Orientation
5. Student Opportunity to Learn Criterion Material
6. Teacher Indirectness
7. Teacher Criticism (Negative)
8. Teacher Use of Structuring Comments
9. Types of Questions
10. Probing
11. Level of Difficulty of Instruction

Competency based instruction can be developed for these behaviors. However, methods instruction designed for these and only these competencies may not be very good instruction. This is only the beginning.

Fourth, considerable additional research must be conducted to determine the effect of these and other variables on cognitive, affective, and psychomotor development of children. Furthermore, the nature of the research must be examined with care. Most of the studies reported in the literature deal with what is occurring in today's classroom. Designing programs based on what teachers are doing with success could be a mistake because teachers so trained may only perpetuate the past and, unless you are convinced that perpetuating the past or training a teacher to be competent last year is desirable, you will have to begin developing some competencies which are not supported by data from research studies. We should consider developing three kinds of competencies in teachers:

1. Those supported by research data.
2. Those supported by logical argument (hypotheses developed).
3. Those weakly supported "gut-level" competencies (developing hypotheses).

An evolutionary methods course should probably contain some instruction of each type. The major portion of the instruction should be aimed at developing those competencies which are supported by process-product research like that reported by Rosenshine and Furst. Those competencies which are supported by argument rather than data could be the focus of research being conducted, and the competencies of the gut-level variety could be the nucleus of future research. This may sound a bit idealistic; however, anyone examining the components of the methods course he is teaching would discover that it contains instruction of the three types. The initial step in developing an evolutionary program could be

as simple as classifying instruction in terms of what is known about the relationship between teacher behavior and student achievement and beginning research on that instruction not supported with empirical data.

The need for empirical data is not unique to developing countries. Useful empirical data is needed by educational developers everywhere. This need is often particularly evident in developing countries where initiating programs has a much higher priority than studying the effects of what is and what has been done. Even in situations that indicate the need for immediate and often extreme action, proceeding without continuous and rigorous evaluation may be a costly error.

A Model and Support For It

The model that follows has been developed and tested with inservice and preservice science teachers in two countries. The development process is not complete in either country and evidence concerning its effectiveness in teacher preparation has not been completely evaluated. However, initial examinations of available data have been interpreted and I can indicate that the results are very promising. Because research data cannot be presented at this time I am reporting the support drawn from the literature when the model was constructed. The support will be cited in parentheses following the statement of the competency and referenced in the bibliography at the end of this paper.

The model constructed is described as a Systems Model of Teacher Activity. The model has been useful to me in my efforts to identify essential competencies.

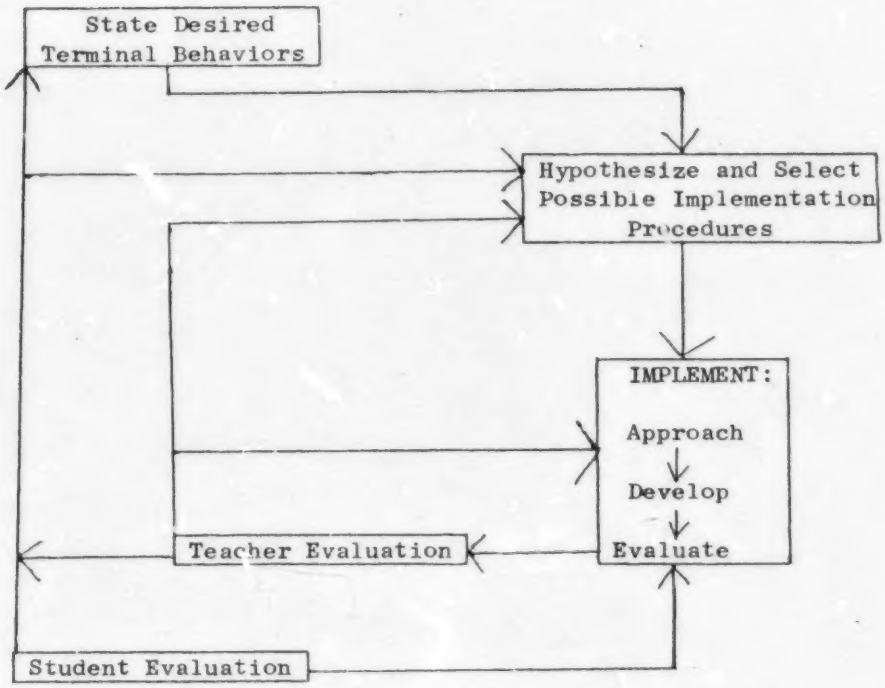

Figure 1.
A systems Model of Teacher Activity

Systems theorists tell us that the systems approach is only as infallible as the information provided the system. That is, the quality of what goes in determines the quality of the product. Hence, if you want to apply the systems approach to teaching, the first competency a teacher must have is either the ability to select or to design "good statements of desired terminal performances." This major competency subsumes at least the following subcompetencies, all of which are logically derived and not tested through process-product research.

1. Write objectives which explicitly state testing situations, performance terms, and qualifying terms. (4)

2. Write objectives for all levels of cognitive, affective, and psychomotor activity. (11)

3. Write objectives consistent with the ability levels of the target population. (10)

4. Write objectives consistent with the nature of the substance being taught.

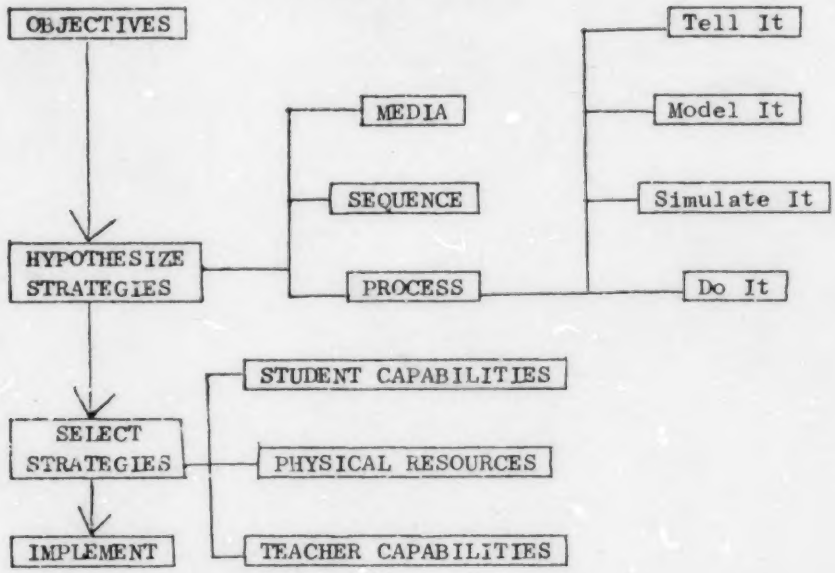

Figure 2.
Hypothesizing and Selecting Strategies

To effectively hypothesize possible teaching strategies, one should have at least these competencies: (See Figure 2).

1. Knowledge of the varieties of media and their effects on learning. (3)

2. Ability to design or select inductive and deductive sequences or hybrids thereof. (10)

3. Ability to select and/or design inquiry, reception, rote, and meaningful teaching strategies. (10)

4. Ability to identify and/or design tell-it, model it, simulate it, and do it processes of teaching. (10)

To select appropriate teaching strategies, one should have at least these competencies: (See Figure 2).

1. Ability to identify the performance level of the student and the performance demands of instruction. (1)

2. Ability to match student and instruction. (1)

3. Knowledge of the physical resources.

4. Knowledge of one's own capability.

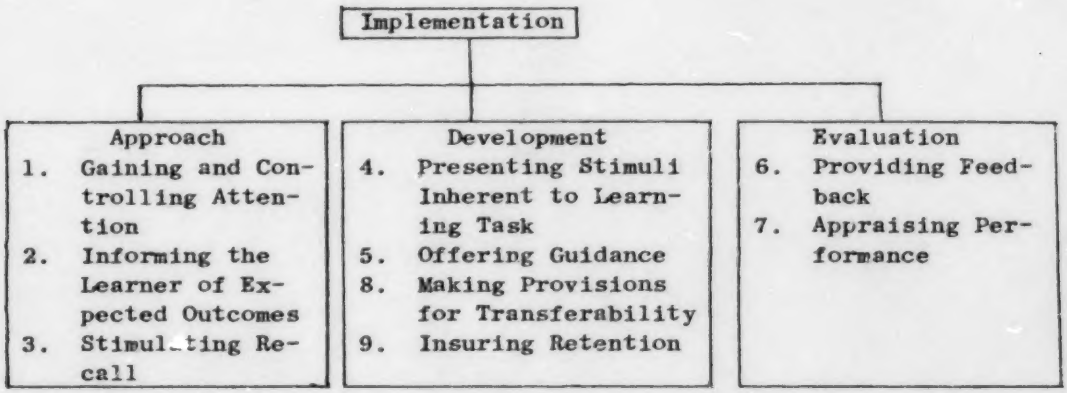

Figure 3.
Implementation

To successfully implement instruction one should have these competencies and/or the ability to select materials that will do these things.[7] (See Figure 3).

Approach:

1. Ability to gain or control attention. (10)
2. Ability to inform the learner of expected outcomes. (10)
3. Ability to stimulate the student to recall relevant prerequisite capabilities. (10)

Development:

1. Ability to present stimuli inherent to the learning task. (10)
2. Ability to probe, provide hints, or prompt the student. (10)
3. Ability to provide additional examples in different contexts. (10)
4. Ability to design or select and provide appropriate practice. (10)

Evaluation:

1. Ability to inform the learner of the correctness of his achievement. (9)
2. Ability to select or design situations in which the learner may verify his achievements. (9)

To evaluate his teaching performance, a teacher should be able to demonstrate at least the following competencies: (See Figure 4).

1. Describe types and levels of questions used during instruction. (11, 7)
2. Describe the quantity and quality of his praise, rejection, and accepting behaviors. (10)
3. Describe the quantity and quality of student verbal interaction. (10)
4. Interpret the data obtained through formative and summative evaluation. (8)

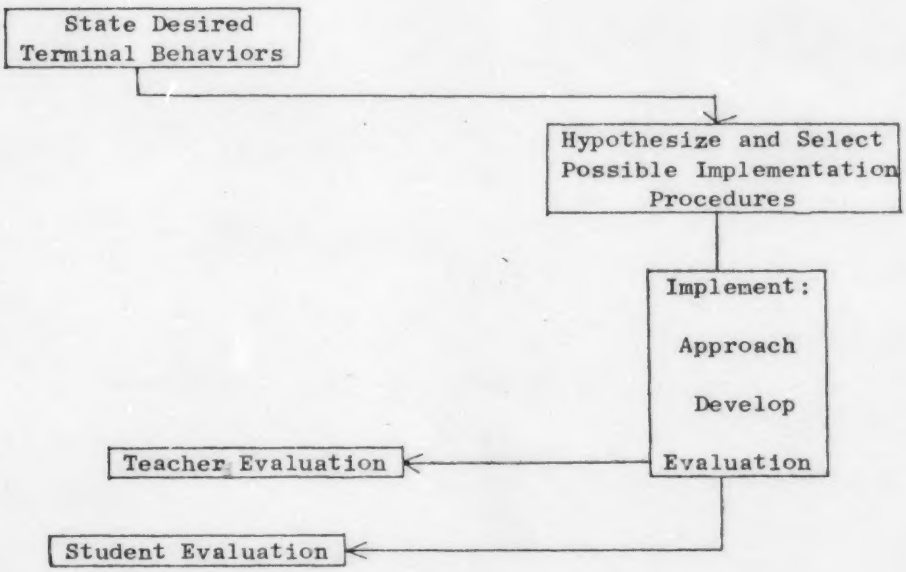

Figure 4.
Evaluation

To evaluate student performance, a teacher should be able to demonstrate at least the following competencies: (See Figure 4).

1. Select and/or design appropriate test items and tests for measuring affective, cognitive, and psychomotor development. (5)
2. Select and/or design informal evaluation procedures. (2)
3. Interpret data obtained through evaluation. (2)

Then in order to make a system like this work, the teacher must have the desire and ability to systematically use all the data collected to revise the objective, the strategy selection procedures, and the implementation procedure he uses.

Summary

The need to modernize teacher education procedures is a universal problem. This need is particularly evident in developing countries where adherence to the old syllabi and the "tried and true methods" of instruction is strong and highly trained personnel capable of leading a reform are in short supply. In this paper I have described a competency approach to teacher education that could become a viable teacher education program. The model provided is a skeleton. It is intended to be only a skeleton and as such it may be useful for preparing many varieties of teachers. The model is a skeleton for another reason. Teacher preparation must be sensitive to the needs and demands of the local society. Hence, the meat for the bones should be added locally by those people most sensitive to local needs, problems, and demands.

(The author expresses appreciation to Mrs. Songsi Chutiwongse, and Professor Gordon Aylward of the Institute for the Promotion of Teaching Science and Technology, Bangkok, Thailand, for their constructive criticism, and most particularly for opportunities they provided me to study education in Thailand. Of course, errors or inconsistencies must be attributed to the author).

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